

CTCGCTCCAAGTTGTGCAGCCGGGACCGCTCGGGGTGTCCAGCCGGCTCGCGGAGGCCCTCTGGGGCGGGCGGGGGCGGCTCGGGG 90
 GCGCCCCCTCAGCAGAAAAACAGGAAGAACAGGCTCGGTCCAGTGGCACCCAGCTCCCTACCTCTGTCCAGCCGCTGGCCTCTGGCA 180
 GCGCATTCCTCAGCGTCCCGACTGTGACCACTTGCTCAGTGTCCCTCTCACCTGCCTCAGTTTCCCTCTGGGGCGGATGGCGGGGCGAG 270
 H A G R

Sma I
 GCTCTCTGGTTTCTGGGGGCATTTACGGCTGTGATTCTGCTGAGGAATTCCCCGGGTGAGCCCCGCTTCTCCGAGCCTGGCACC 360
 G S L V S W R A F H G C D S A E E L P R V S P R F L R A W H

Sma I
 CCGCTCCCGTCTCAGCCAGGATGCCAAGAGCGCTGGGCCCCGGGCACCCAGTGTATCACAAATGCGAGCACACCCGCCCAAGCCAG 450
 P P P V S A R M P T R R W A P G T Q C I T K C E H T R P K P

Stu I Kpn I
 GGGAGCTGGCCTTCCGCAACGGCGACGTGCTCACCATCCTGGAGGCTCGGAGAACAGAGCTGGTACCGCTCAAGCACCACACCACTG 540
 G E L A F R K G D V Y T I L E A C E N K S W Y R V K H H T S

Pvu II
 GACAGGAGGGGCTGTGGCAGCTGGGGCGCTGGGGAGCGGGAGGCCCTCTCCGAGACCCCAAGCTCAGCCTCATGCCGTGGTTCCACG 630
 G Q E G L L A A G A L R E R E A L S A D P K L S L M P W F H

Pvu II Pst I
 GGAAGATCTCGGGCCAGGAGGCTGTCCAGCAGCTGCAGCCTCCCGAGGATGGGCTGTTCTGCTGCGGGAGTCCGCGCGCCACCCGGCG 720
 G K I S G Q E A V Q Q L Q P P E D G L F L V R E S A R H P G

Cla I
 ACTACGCTCTGTGCTGAGCTTTGCGCGGACGTCATCCACTACCGGCTGCTGCACCGGACGGCCACCTCACAATCGATGAGGCCGTGT 810
 D Y V L C V S F G R D V I H Y R V L H R D G H L T I D E A V

TCTTCTGCAACCTCATGGACATGGTGGAGCATTACAGCAAGGACAAGGGCGCTATCTGCACCAAGCTGGTGAGACCAABCGGAAACAG 900
 F F C N L M D H V E H Y S K D K G A I C T K L V R P K R K H

Pst I
 GGACCAAGTCGGCCGAGGAGGCTGCCAGGGCGGCTGGTTACTGAACCTGCAGCATTGACATTGGGAGCACAGATCGGAGAGGGAG 990
 G T K S A E E E L A R A G W L L N L Q H L T L G A Q I G E G

Pst I Stu I
 AGTTTGGAGCTCTCCTGCAGCGTCAGTACCTGGGGCAAAAGGTGGCCGTGAAGAATATCAAGTGTGATGTGACAGCCCGAGGCTTCTCTG 1080
 E F G A V L Q G E Y L G Q K V A V K N I K C D V T A Q A F L

ACGAGACGGCGCTCATGACGAAGATGCAACACGAGAACCTGGTGGCTCTCCTGGGCGTGATCCTGCACCAGGGCGCTGTACATTGTCATGG 1170
 D E T A V M T K M Q H E N L V R L L G V I L H Q G L Y I V M

Sma I Pst I
 AGCAGCTGAGCAAGGGCAACCTGGTGAACCTTCTGCGGACCCGGGTGAGCCCTCGTGAACACCGCTCAGCTCCTGCAGTTTTCTCTGC 1260
 E H V S K G N L V N F L R T R G R A L V N T A Q L L Q F S L

SH3

SH2

TK

FIGURE 1A

Hind III

ACGTGCCCCGACGGCATGGAGTACCTGGAGAGCAAGAAGCTTGTGCACCGCGACCTGGCCCCCGCAACATCCTGGTCTCAGAGGACCTGG 1350
 H V A E G H E Y L E S K K L V H R D L A A R N I L V S E D L

TGGCCAAGGTCACCGACTTTGGCCTGGCCAAAGCGGAGCGGAAGGGCTAGACTCAAGCCGGCTGCCCCCTCAAGTGGACGGCGCCCGAGG 1440
 V A K Y S D F G L A K A E R K G L D S S R L P V K W T A P E

Nde I

CTCTCAAAACACGGGAAGTTCAACCAGCAAGTCCGATGTCTGGAGTTTTGGGGTGCTGCTCTGGGAGGTCTTCTCATATGGACGGGCTCCGT 1630
 A L K H G K F T S K S D V W S F G V L L W E V F S Y G R A P

Kpn I

ACCCTAAATGTCACTGAAAGAGGTGTGGAGGCGGTGGAGAAGGGCTACCGCATGGAACCCCCGAGGGCTGTCCAGGCCCCGTGCAGG 1820
 Y P K H S L K E V S E A V E K G Y R H E P P E G C P G P V H

Pvu II

Sma I

TCCTCATGAGCAGCTGCTGGGAGGCAGAGCCCCGCCCCGCGCCACCCTTCCGCAAAGTGGCCGAGAAGCTGGCCCCGGGAGCTACGCAGTG 1710
 Y L H S S C W E A E P A R R P P F R K L A E K L A R E L R S

CAGGTGCCCCAGCCTCCGTCTCAGGGCAGGACGCCGACGGCTCCACCTCGCCCCGAAGCCAGGAGCCCTGACCCCATCCCGTGGGGCCCT 1800
 A G A P A S V S G D D A D G S T S P R S O E P

TGGCCCCAGAGGACCGAGAGAGTGCAGAGTGGGGCTGGGGGCACTGACCAGGCCCAAGGAGGGTCCAGGCGGGCAAGTCATCCTCCTGG 1890

TGCCCCACAGCAGGGGCTGCCCCACGTAGGGGGCTGTGGCGGGCCCTGGACACCCAGACCTCCGAAGGATGATCGCCCCATAAAGACGG 1980

ATTCTAAGGACTCTAAAAAA 2000

FIGURE 1B

CCGCTTTTTGCTTAGAGCTTGAGAGTCAAAG

CCCACATGTATACTTCGGCTCTAGCGAGT

TGATAATATGGATACAA

126509

AAATCTATTCTAGAAGAACTTCTTCTCAAAGATCACAGCAAAAGAAAGAAATGTCACCAAATAATTACAAAGAACGGCTTTTTGTTTTG 180

K S I L E E L L L K R S O O K K K M S P N N Y K E R L F V L

ACCAAAACAAACCTTCTACTATGAATATGACAAAATGAAAAGGGGCAGCAGAAAAGGATCCATTGAAATTAAGAAAATCAGATGTGTG 270

T K T N L S Y Y E Y D K M K R G S R K G S I E I K K I R C V

GAGAAAGTAAATCTCGAGGAGCAGACGCCTGTAGAGAGACAGTACCCATTTAGATTGTCTATAAAGATGGGCTTCTCTATGTCTATGCA 360

E K V N L E E O T P V E R Q Y P F O I V Y K D G L L Y V Y A

TCAAATGAAGAGAGCCGAAGTCAGTGGTTGAAAGCATTACAAAAGAGATAAGGGGTAACCCCCACCTGCTGGTCAAGTACCATAGTGGG 450

S N E E S R S O W L K A L O K E I R G N P H L L V K Y H S G

TTCTTCGTGGACGGGAAGTTCCTGTGTTGCCAGCAGAGCTGTAAAGCAGCCCCAGGATGTACCCTCTGGGAAGCATATGCTAATCTGCAT 540

F F V D G K F L C C O O S C K A A P G C T L W E A Y A N L H

ACTGCAGTCAATGAAGAGAAACACAGAGTTCACCTTCCAGACAGAGTGCTGAAGATACCTCGGGCAGTTCCTGTTCTCAAATGGAT 630

T A V N E E K H R V P T F P D R V L K I P R A V P V L K M D

GCACCATCTTCAAGTACCACTCTAGCCCAATATGACAACGAATCAAAGAAAACCTATGGCTCCAGCCACCATCTTCAAGTACCACTCTA 720

A P S S S T T L A Q Y D N E S K K N Y G S O P P S S S T S L

CGGCAATATGACAGCAACTCAAAGAAAATCTATGGCTCCAGCCAACTTCAACATGCAGTATATTCCAAGGGAAGACTTCCCTGACTGG 810

A Q Y D S N S K K I Y G S O P N F N M O Y I P R E D F P D W

TGGCAAGTAAGAAAACCTGAAAAGTAGCAGCAGCAGTGAAGATGTTGCAAGCAGTAACCAAAAAGAAAGAAATGTGAATCACACCACCTCA 900

W Q V R K L K S S S S S E D V A S S N O K E R N V N H T T S

AAGATTTTCATGGGAATTCCCTGAGTCAAGTTCATCTGAAGAAGAGGAAAACCTGGATGATTATGACTGGTTTGCTGGTAACATCTCCAGA 990

K I S W E F P E S S S S E E E E N L D D Y D W F A G N I S R

TCACAATCTGAACAGTTACTCAGACAAAAGGGAAAAGAAGGAGCATTATGTTAGAAATTCGAGCCAAGTGGGAATGTACACAGTGTCC 1080

S O S E O L L R O K G K E G A F M V R N S S O V G M Y T V S

TTATTTAGTAAGGCTGTGAATGATAAAAAAGGAACCTGTCAAACATTACCACGTGCATACAAATGCTGAGAACAAATTATACCTGGCAGAA 1170

L F S K A V N D K K G T V K H Y H V H T N A E N K L Y L A E

AACTACTGTTTTGATTCCATTCCAAAGCTTATTCATTATCATCAACACAATTCAGCAGGCATGATCACACGGCTCCGCCACCCTGTGTCA 1260

N Y C F D S I P K L I H Y H Q H N S A G H I T R L R H P V S

ACAAAGGCCAACAGGTCCCCGACTCTGTGTCCCTGGGAAATGGAATCTGGGAACTGAAAAGAGAAGAGATTACCTTGTGAAGGAGCTG 1350

T K A N K V P D S V S L G N G I W E L K R E E I T L L K E L

GGAAGTGGCCAGTTTGGAGTGGTCCAGCTGGGCAAGTGAAGGGGCAGTATGATGTTGCTGTTAAGATGATCAAGGAGGGCTCCATGTCA 1440

G S G O F G V V O L G K W K G Q Y D V A V K M I K E G S M S

GAAGATGAATCTTTCAGGAGGCCAGACTATGATGAACTCAGCCATCCCAAGCTGGTTAAATTCTATGGAGTGTGTTCAAAGGAATAC 1530

E D E F F O E A O T M M K L S H P K L V K F Y G V C S K E Y

CCCATATACATAGTGAATATATAAGCAATGGCTGCTTGGTGAATTACCTGAGGAGTCACGGAAAAGGACTTGAACCTTCCCAGCTC 1620

P I Y I V T E Y I S N G C L L N Y L R S H G K G L E P S O L

TTAGAAATGTGCTACGATGTCTGTGAAGGCATGGCCTTCTTGGAGAGTCACCAATTCATACACGGGACTTGGCTGCTCGTAACTGCTTG 1710

L E M C Y D V C E G M A F L E S H Q F I H R D L A A R N C L

GTGGACAGAGATCTCTGTGTGAAAGTATCTGACTTTGGAATGACAAGGTATGTTCTTGATGACCAGTATGTCAGTTCAGTCGGAACAAAG 1800

V D R D L C V K V S D F G M T R Y V L D D O Y V S S V G T K

FIGURE 2A

TTTCCAGTCAAGTGGTCAGCTCCAGAGGTGTTTCATTACTTCAAATACAGCAGCAAGTCAGACGTATGGGCATTTGGGATCCTGATGTGG 1890
F P V K W S A P E V F H Y F K Y S S K S D V W A F G I L M W

GAGGTGTTTCAGCCTGGGGAAGCAGCCCTATGACTTGTATGACAACTCCCAGGTGGTTCTGAAGGTCTCCCAGGGCCACAGGCTTTACCGG 1980
E V F S L G K Q P Y D L Y D N S O V V L K V S Q G H R L Y R

CCCCACCTGGCATCGGACACCATCTACCAGATCATGTACAGCTGCTGGCAGAGCTTCCAGAAAAGCGTCCCACATTTTCAGCAACTCCTG 2070
P H L A S D T I Y Q I M Y S C W H E L P E K R P T F O O L L

TCTTCCATTGAACCACTTCGGGAAAAAGACAAGCATTGAAGAAGAAATTAGGAGTGCTGATAAGAATGAATATAGATGCTGGCCAGCATT 2160
S S I E P L R E K D K H

TTCATTCATTTTAAGGAAAGTAGCAAGGCATAATGTAATTTAGCTAGTTTTTAATAGTGTTCTCTGTATTGTCTATTATTTAGAAATGAA 2250

CAAGGCAGGAAACAAAAGATTCCCTTGAAATTTAGGTCAAATTAGTAATTTTGTATGCTGCCCTGATATAACACTTTCCAGCCTATA 2340

GCAGAAGCACATTTTCAGACTGCAATATAGAGACTGTGTTTCATGTGTAAAGACTGAGCAGAACTGAAAAATTACTTATTGGATATTCATT 2430

CTTTTCTTTATATTGTCATTGTCACAACAATTAATATACTACCAAGTACAAAAAAAAAAAAAAAAAAAAA 2500

FIGURE 2B

CCGGACTGGTCCAAAGACAGGAACAGACTTGAAACAGGGGAGAGCTCCTGGCGAAACGAAGACGTGGAGGTTTTACCAGGGATAAGAAG 90
 AAAAGACACCTTCTAGTGAGCAGCTGCCAGCTCCTGCTCAGTTTTGCCTCGGGGTAGCACCTCCAGCCACAGAAAGCAAGCCGGTAAG 180
 TCTCTCCAGGTAGGACTTGCTGCAACCCAGCTGCTGGACTGATCTGAAACGGGACTTTGCATACTCTCCGAAGTATGGTGAGTTGGTGCT 270
 H V S W C
 GACTTCAAAGTTGCCTGGTGAAGGAAGATAAGGTGGATCGCAGAGACTAAGGGGACAGGGAGAAGCCCTGCTCCTCTCTCCCCACCAAG 360
 GCACAATCAGCAACATCTGTGAGGCTCTGGGAGTACCTAGAACCCTATCTCCCTGTTTTGTCCACGGAGGCAGACAAGTCAACCGTGA 450
 H S N I C O R L W E Y L E P Y L P C L S T E A D K S T V
 TTGAAAATCCAGGGGCGCTTTTCTCTCCCCAGTCACAGAGGCATGGCCACTACTTTGTGGCTTTGTTTGATTACCAGGCTCGGACTGCTG 540
 I E N P G A L C S P O S O R H G H Y F V A L F D Y Q A R T A
 AGGACTTGAGCTTCCSAGCAGGTGACAACTTCAAGTTCTGGACACTTTGCATGAGGGCTGGTGGTTTCCAGACACTTGGAGAAAAGAC 630
 E D L S F R A G D K L Q V L D T L H E G W W F A R H L E K R
 CAGATGGCTCCAGTCAGCAACTACAAGGCTATATTCCTTCTAACTACGTGGCTGAGGACAGAAGCCTACAGGCACAGCCGTGGTTCTTTG 720
 R D G S S Q Q L Q G Y I P S N Y V A E D R S L Q A E P W F F
 CAGCAATCGGAAGATCAGATGCAGAGAAACAATATTATTCAGAAAACAAGACCGGTTCTTTTCTAATCAGAGAAAGTGAAGCCAAA 810
 G A I G R S D A E K O L L Y S E N K T G S F L I R E S E S Q
 AAGGAGAATTCTCTCTTTTCAAGTTTGTAGTGGAGCAGTTGTAAACACTACAGAATTAAGAGCTGGATGAAGGGGATTTTTTCTCACGC 900
 K G E F S L S V L D G A V V K H Y R I K R L D E G G F F L T
 GAAGAAGAATCTTTTCAACACTGAACGAATTTGTGAGCCACTACACCAAGACAAGTGACCGCCTGTGTGCAAGCTGGGGAAACCATCCT 990
 R R R I F S T L N E F V S H Y T K T S D G L C V K L G K P C
 TAAAGATCCAGGTCCCAGCTCCATTTGATTTGTCGTATAAAACCGTGGACCAATGGGAGATAGACCGCAACTCCATACAGCTTCTGAAGC 1080
 L K I O V P A P F D L S Y K T V D Q W E I D R N S I Q L L K
 GATTGGCATCTGGTCAGTTTGGCGAAGTATGGGAAGGTCTGTGGAACAATACCACTCCAGTAGCAGTGAAAACATTAAACACAGTTCAA 1170
 R L G S G Q F G E V W E G L W N N T T P Y A V K T L K P G S
 TGGATCCAAATGACTTCTGAGGGAGGCACAGATAATGAAGAACCTAAGACATCCAAAGCTTATCCAGCTTTATGCTGTTTGCACTTTAG 1260
 H D P N D F L R E A Q I M K N L R H P K L I Q L Y A V C T L
 AAGATCCAATTTATATTATTACAGAGTTGATGAGACATGGAAGTCTGCAAGAATATCTCCAAATGACACTGGATCAAAAATCCATCTGA 1350
 E O P I Y I I T E L M R H G S L Q E Y L Q N D T G S K I H L
 CTCAACAGGTAGACATGGCGGCACAGGTTCCTCTGGAATGGCCTATCTGGAAGTCTGGAAGTACATTACAGAGATCTGGCTGCCAGAA 1440
 T Q O V D M A A Q V A S G M A Y L E S R N Y I H R D L A A R
 ATGTCCTCGTTGGTGAACATAATATCTACAAAGTAGCAGATTTTGGACTTGCCAGAGTTTAAAGGTAGATAATGAAGACATCTATGAAT 1530
 N Y L V G E H N I Y K V A D F G L A R V F K V D N E D I Y E
 CTAGACACGAAATAAGCTGCCGGTGAAGTGGACTGCGCCCGAAGCCATTCTAGTAATAAATTACGATTAAGTCCGATGTATGGTCAT 1620
 S R H E I K L P V K W T A P E A I R S N K F S I K S D V W S
 TTGGAATCCTCTTTATGAAATCATTACTTATGGCAAAATGCCTTACAGTGGTATGACAGGTGCCAGGTAATCCAGATGTTGGCTCAAA 1710
 F G I L L Y E I I T Y G K M P Y S G M T G A Q V I Q M L A O
 ACTATAGACTTCCGCAACCATCCAAGTGTCCACAGCAATTTTACAACATCATGTTGGAGTGCTGGAATGCAGAGCCTAAGGAACGACCTA 1800
 N Y R L P Q P S N C P Q Q F Y N I M L E C W N A E P K E R P

SH3

SH2

TK

FIGURE 3A

CATTTGAGACACTGCGTTGGAAACTTGAAGACTATTTTGAACAGACTCTTCATATTCAGATGCAAATAACTTCATAAGATGAACACTGC 1890
T F E T L R W K L E D Y F E T D S S Y S D A N N F I R .
AGAAGAATATCAAATAATAAAGTAGCAAAACAAATTCAAATAATCCATTCCAAAATACAATGTTATCAACCAACTGCACAATCAGTTTAT 1880
CCTGACATATTCAGTGATAGGATAAAGTTGGCCATGTATTATGAAAAAGATTATTTGTGCATTTTATTGACTGGGCAACACTGCAGGAC 2070
AGTCAAGGTCATATATAATTGCTCACTGCCTGGAAAATTAAGCACACTAAACCAAGTTATTTTTCTTTTAAAGAGATACTTACATTTCCA 2160
TTTATTGTTTGAAATGTCGCGATCAAGAGAATCAACAGATGATAGTCCAATTTTACTCAGTGATGACTGTGTAGCATTTTCTGTTTAC 2250
TGATTAGAGTGGTTATTCATTATTCCTCAGATTGCTGAATCCCATCAGGCTGTTATTATGAAGGAATTTGATTGCTTTGCTGCACAGCAG 2340
GACCTGCTCTTTGAGATTTTTTTTTCTCTTTTAAAAATATCCTGTAACATAATGATGGTAAAGCCATGTTAAATGACTTCATTGTACTTG 2430
GACTAATTGCACATTTTTTTCTATGCATAAAAAAATGATGCAGCTGTTGAGAAAACGAAGTCTTTTTCATTTTGCAGAAGGAAATGATGG 2520
AATTTTTCTGTACTTCAGTATGTGTCAACTGAGAGTCATATACATTAGTTTTAATCTCTTAATATTGAGAATCAGGTTGCAAAACGGATG 2610
AGTTATTATCTATGCAAATGTGAGAAATGTCTAATAGCCATAAAGTCTGAGAAAATAGGTATCAAAATAGTTTAGGAAAATGAGAGGAGA 2700
ACAGTAGGATTGCTGTGGCCTAGACTTCTGAGTAATTAATAAGAAAAAGAAGTACCAAAAAAAAAAAAA 2770

FIGURE 3B

Expression of MKK1 and MKK2

08 426509

		<u>MKK1</u>	<u>MKK2</u>
Human			
Meg/Eryth	Meg-01	+++	+++
	K562	++	+
	Mo7e	++	+
	HEL	+++	++
Myelo/Mac	KG-1	+	++
	HL-60	+	+
	TF-1	+	+
B-cell	ALL-1	-	+
	Raji	-	-
	Daudi	-	-
T-cell	Molt-3	-	-
	Jurkat	-	-
Epithelial	Hela	-	-
Rodent			
	BM	+	+++
	Spleen	+++	+
	Thymus	-	-
	Liver	-	-
	Brain	+	-
rat neural	P19	+	-

FIGURE 4

**Immunoprecipitation Of In Vitro Transcribed
Translated MKK1 And MKK2 Proteins**

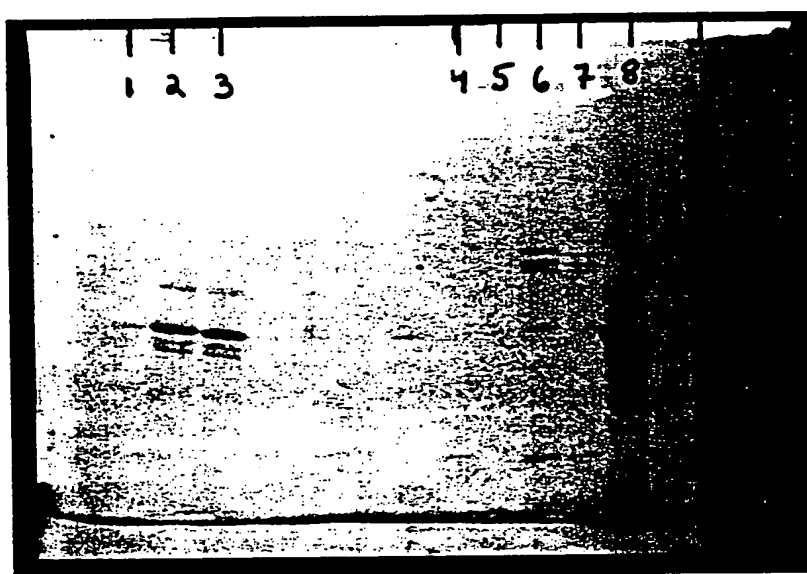


FIGURE 5

Antisense MKK1 Expression Suppresses AChE Production In Primary Murine Bone Marrow Cultures

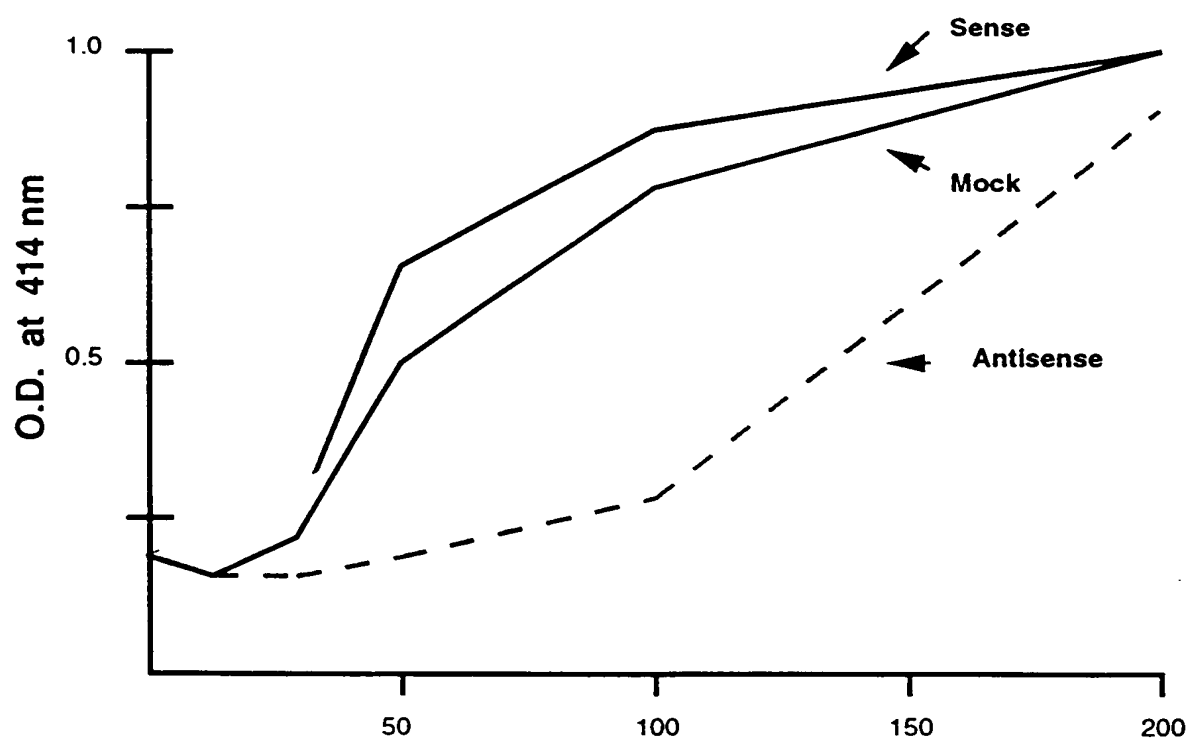


FIGURE 6A

Cell Number x $10^3/200$ ul



FIGURE 6B

MKK2 AND MKK3 AUTOPHOSPHORYLATE
TRANSPHOSPHORYLATE PROTEINS WHEN EXPRESSED IN BACTERIA

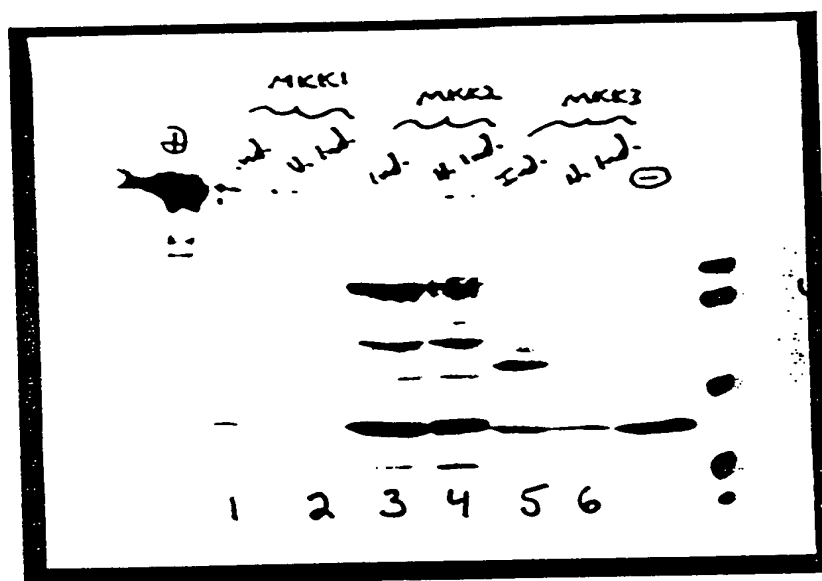


FIGURE 7

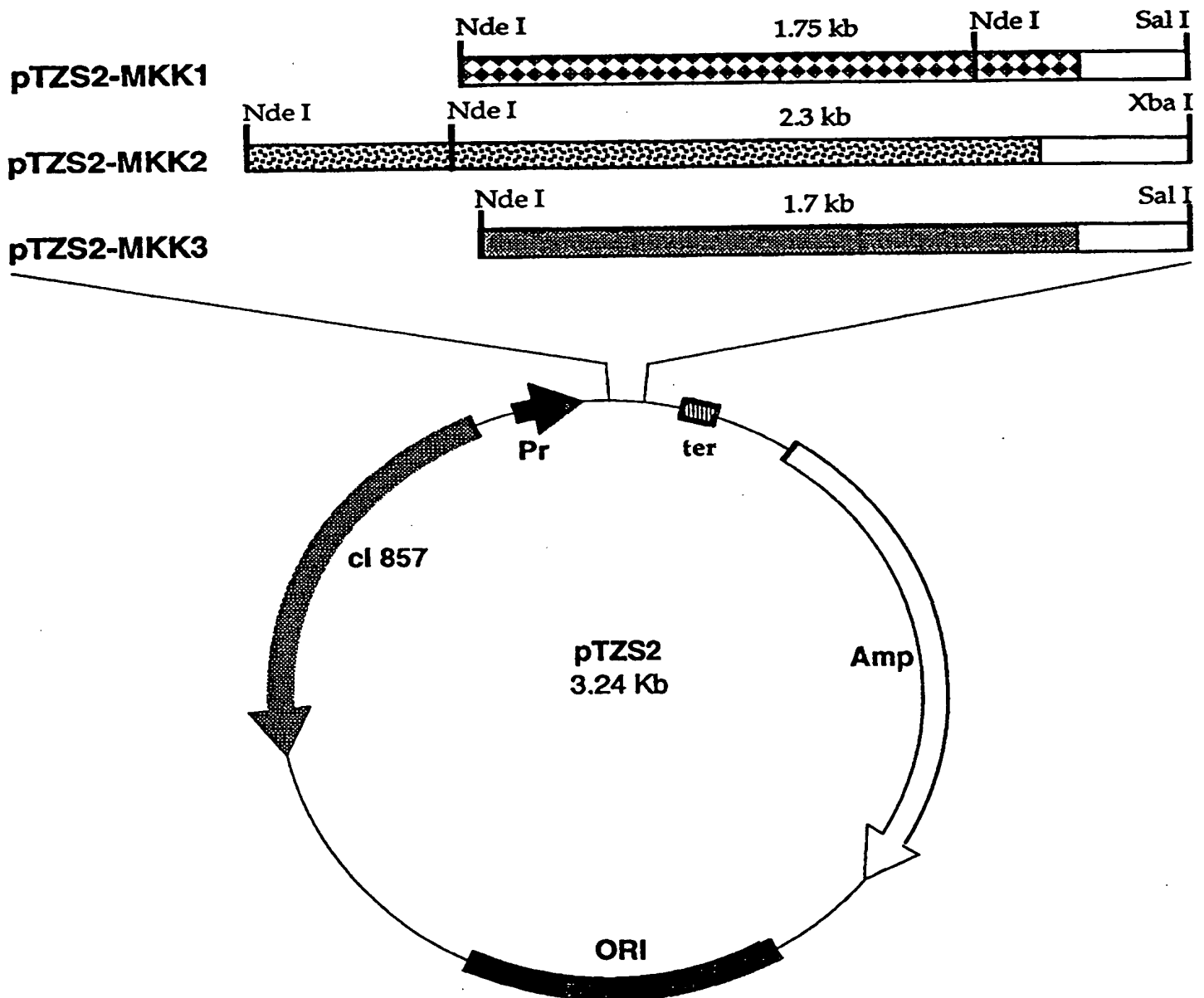


FIGURE 8

1 MAGRGSLVSWRAFHGCDSEELPRVSPRFL MKK1 aa
 1 MSAIQAA - - - - - hCSK (JH0559)

31 RAWHPPPVSARMPTRRWAPGTOCITKCEHT MKK1 aa
 8 - - - - - WPSGTECI AKYNFH hCSK (JH0559)

61 RPKPGELAFRKGDVVITLEACENKSWYRVK MKK1 aa
 22 GTAEQDLPLFCCKGDVLTIVAVTKDPNWYKAK hCSK (JH0559)

91 HHTSGOEGLLAAGALREREALSADPKLSLM MKK1 aa
 52 NKV - GR EGIIP ANYVQKREGVKA GTKLSLM hCSK (JH0559)

121 PWFHGKISGOEAVOOLOPPEDGLFLVRESA MKK1 aa
 81 PWFHGKITREQAERLLYPPE TGLFLVRES T hCSK (JH0559)

151 RHPGDYVLCVSFGRDVIHYRVLHRDGH LTI MKK1 aa
 111 NYPGDY T LCVS CDGKVEHYRIMYHAS KLSI hCSK (JH0559)

181 DEAVFFCNLMMDMVEHYSKDKGAICTKLVRP MKK1 aa
 141 DEEVYF ENLMQLVEHYTSDADGLCTR L IKP hCSK (JH0559)

211 KRKHGTSKSAEEELARAGWLLNLQHLTLGAO MKK1 aa
 171 KVM EGT VAAQDEFYRS GWALNMKE LKL LQT hCSK (JH0559)

241 IGEGEFGAVLOGEYLGOKVAVKNIKCDVTA MKK1 aa
 201 IGKGEFGDVM L G DYRG NKVAVKCIKN D ATA hCSK (JH0559)

271 QAFLDETA VMTKMOHENLVRL LGVILHO - - MKK1 aa
 231 QAF L AEASVMTQLRH SNLVQL LGVIV E E KG hCSK (JH0559)

299 GLYIVMEHVSKGNLVNFLRTRGRA LVNTAO MKK1 aa
 261 GLYIV TEYMAKGS LV DYLR SRGR SVLG GDC hCSK (JH0559)

329 LLOFSLHVAEGMEYLESKKLVHRDLAARNI MKK1 aa
 291 LLKFS L DVC EAMEYLEGN NFVHRDLAARNV hCSK (JH0559)

359 LVSEDLVAKVSDFG LA KAERKGLDSSRLPV MKK1 aa
 321 LVSEDNVAKVSDFG L TKEASSTQ D T G K L P V hCSK (JH0559)

389 KWTAPEALKHGKFTSKSDVWSFGVLLWEVF MKK1 aa
 351 KWTAPEAL REKKFSTKSDVWSFG IL LWEIY hCSK (JH0559)

419 SYGRAPYPKMSLKEVSEAVEKGYRMEPPPEG MKK1 aa
 381 SFGRVPYPRIPLKDVVPRVEKGYKMDAPD G hCSK (JH0559)

449 CPGPVHVLMS SCWEAEPARRPPFRKLA EKL MKK1 aa
 411 CPPAVYEV MKN C WH L D A A M R P S F L Q L R E Q L hCSK (JH0559)

479 ARELRSAGAPASVSGODADGSTSPRSOEP MKK1 aa
 441 EH - - - - - I K T H E L H - - - - - L hCSK (JH0559)

FIGURE 9

1	M	D	T	K	S	I	L	E	E	L	L	L	K	R	S	Q	Q	K	K	K	M	S	P	N	N	Y	K	E	R	L	MKK2	aa		
1	M	A	A	-	V	I	L	E	S	I	F	L	K	R	S	Q	Q	K	K	K	T	S	P	L	N	F	K	K	R	L	hAtk	(X58957)		
1	M	N	N	F	I	L	L	E	E	Q	L	I	K	K	S	O	O	K	R	R	T	S	P	S	N	F	K	V	R	F	hTKT	(L10717)		
1	M	M	V	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	mTec	(X5663)		
31	F	V	L	T	K	T	N	L	S	Y	Y	E	-	-	Y	D	K	M	K	R	G	S	R	K	G	S	I	E	I	K	MKK2	aa		
30	F	L	L	T	V	H	K	L	S	Y	Y	E	Y	D	F	E	R	G	R	R	G	S	K	K	G	S	I	D	V	E	hAtk	(X58957)		
31	F	V	L	T	K	A	S	L	A	Y	F	E	D	R	-	-	H	G	K	K	R	T	L	K	G	S	I	E	L	S	hTKT	(L10717)		
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	mTec	(X5663)		
59	K	I	R	C	V	E	K	V	N	L	E	E	Q	T	P	V	E	R	Q	-	-	-	-	-	-	-	-	-	-	-	-	MKK2	aa	
60	K	I	T	C	V	E	T	V	V	P	E	K	N	P	P	P	E	R	Q	I	P	R	R	G	E	E	S	S	E	M	hAtk	(X58957)		
59	R	I	K	C	V	E	I	V	K	S	D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	hTKT	(L10717)		
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	mTec	(X5663)		
78	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	MKK2	aa	
90	E	Q	I	S	I	I	E	R	F	P	Y	P	F	Q	V	V	Y	D	E	G	P	L	Y	V	F	S	P	T	E	E	hAtk	(X58957)		
70	-	-	I	S	I	P	C	H	Y	K	Y	P	F	Q	V	V	H	D	N	Y	L	L	Y	V	F	A	P	D	R	E	hTKT	(L10717)		
4	-	-	-	-	-	-	-	-	-	-	S	F	P	V	K	I	N	F	H	S	S	P	-	-	-	-	-	-	-	-	-	Q	mTec	(X5663)
98	S	R	S	Q	W	L	K	A	L	Q	K	E	I	R	G	N	P	H	L	L	V	K	Y	H	S	G	F	F	V	D	MKK2	aa		
120	L	R	K	R	W	I	H	Q	L	K	N	V	I	R	Y	N	S	D	L	V	Q	K	Y	H	P	C	F	W	I	D	hAtk	(X58957)		
98	S	R	Q	R	W	V	L	A	L	K	E	E	T	R	N	N	N	S	L	V	P	K	Y	H	P	N	F	W	M	D	hTKT	(L10717)		
17	S	R	D	R	W	V	K	K	L	K	E	E	I	K	N	N	N	N	I	M	I	K	Y	H	P	K	F	W	A	D	mTec	(X5663)		
128	G	K	F	L	C	C	Q	Q	S	C	K	A	A	P	G	C	T	L	W	E	A	Y	A	N	L	H	T	A	V	N	MKK2	aa		
150	G	Q	Y	L	C	C	S	Q	T	A	K	N	A	M	G	C	Q	I	L	E	N	R	N	G	S	L	K	P	G	S	hAtk	(X58957)		
128	G	K	W	R	C	C	S	Q	L	E	K	L	A	T	G	C	A	Q	Y	D	-	-	-	-	-	-	-	-	-	-	-	hTKT	(L10717)	
47	G	S	Y	Q	C	C	R	O	T	E	K	L	A	P	G	C	E	K	Y	N	L	F	E	S	S	I	-	-	-	-	-	mTec	(X5663)	
158	E	E	K	H	R	V	P	T	F	P	D	R	V	L	K	I	P	R	A	V	P	V	L	K	M	D	A	P	S	S	MKK2	aa		
180	S	H	R	K	T	K	K	P	L	P	P	-	-	-	-	-	T	P	E	E	D	Q	I	L	K	K	P	L	P	P	E	hAtk	(X58957)	
149	T	K	N	A	S	K	K	P	L	P	P	-	-	-	-	-	T	P	E	D	N	R	-	-	-	-	-	-	-	-	-	hTKT	(L10717)	
73	-	-	-	-	-	R	K	T	L	P	P	-	-	-	-	-	A	P	E	-	-	-	-	I	K	K	R	R	P	P	-	mTec	(X5663)	
188	S	T	T	L	A	Q	Y	D	N	E	S	K	K	N	Y	G	S	Q	P	P	S	S	S	T	S	L	A	Q	Y	D	MKK2	aa		
206	P	A	A	A	P	V	S	T	S	E	L	K	K	-	-	-	-	-	-	-	-	-	-	V	V	A	L	Y	D	hAtk	(X58957)			
166	-	-	-	R	P	L	W	E	P	E	E	T	V	-	-	-	-	-	-	-	-	-	-	V	I	A	L	Y	D	hTKT	(L10717)			
89	P	P	I	P	P	E	E	E	N	T	E	E	I	-	-	-	-	-	-	-	-	-	-	V	V	A	M	Y	D	mTec	(X5663)			
218	S	N	S	K	K	I	Y	G	S	Q	P	N	F	N	M	Q	Y	I	P	R	E	D	F	P	-	D	W	W	Q	V	MKK2	aa		
225	Y	M	P	M	N	A	N	D	L	O	L	R	K	G	D	E	Y	F	I	L	E	E	S	N	L	P	W	W	R	A	hAtk	(X58957)		
182	Y	Q	T	N	D	P	Q	E	L	A	L	R	R	N	E	E	Y	C	L	L	D	S	S	E	I	H	W	W	R	V	hTKT	(L10717)		
108	F	Q	A	T	E	A	H	D	L	R	L	E	R	G	Q	E	Y	I	I	L	E	K	N	D	L	H	W	W	R	A	mTec	(X5663)		
247	R	K	L	K	S	S	S	S	S	E	D	V	A	S	S	N	Q	K	E	R	N	V	N	H	T	T	S	K	I	S	MKK2	aa		
255	R	D	-	-	K	N	G	Q	E	G	Y	I	P	S	N	Y	V	T	E	-	A	-	-	-	-	-	-	-	-	-	-	hAtk	(X58957)	
212	Q	D	-	-	R	N	G	H	E	G	Y	V	P	S	S	Y	L	V	E	K	S	-	-	-	-	-	-	-	-	-	-	hTKT	(L10717)	
138	R	D	-	-	K	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	mTec	(X5663)	
277	W	E	F	P	E	S	S	S	S	E	E	E	N	L	D	D	Y	D	W	F	A	G	N	I	S	R	S	Q	S	MKK2	aa			
273	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	hAtk	(X58957)	
231	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	hTKT	(L10717)	
141	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	mTec	(X5663)	
307	E	Q	L	L	R	Q	K	G	K	E	G	A	F	M	V	R	N	S	S	O	V	G	M	Y	T	V	S	L	F	S	MKK2	aa		
292	E	Q	L	L	K	O	E	G	K	E	G	G	F	I	V	R	D	S	S	K	A	G	K	Y	T	V	S	V	F	A	hAtk	(X58957)		
250	E	K	L	L	L	D	T	G	K	E	G	A	F	M	V	R	D	S	R	T	A	G	T	Y	T	V	S	V	F	T	hTKT	(L10717)		
154	E	Q	L	L	R	T	E	D	K	E	G	G	F	M	V	R	D	S	S	O	P	G	L	Y	T	V	S	L	Y	T	mTec	(X5663)		

FIGURE 10A

337 K - A V N D K K G T V K H Y H V H - - T N A E N K L Y L A E MKK2 aa
 322 K S T - G D P Q G V I R H Y V V - - C S T P Q S Q Y Y L A E hAtk (X58957)
 280 K A V V S E N N P C I K H Y H I K E T N D N P K R Y Y V A E hTKT (L10717)
 184 K F G - G E G S S G F R H Y H I K E T A T S P K K Y Y L A E mTec (X5663)

364 N Y C F D S I P K L I H Y H Q H N S A G M I T R L R H P V S MKK2 aa
 349 K H L F S T I P E L I N Y H Q H N S A G L I S R L K Y P V S hAtk (X58957)
 310 K Y V F D S I P L L I N Y H Q H N G G G L V T R L R Y P V C hTKT (L10717)
 213 K H A F G S I P E I I E Y H K H N A A G L V T R L R Y P V S mTec (X5663)

394 T K A N K V P D S V S L G N G I W E L K R E E I T L L K E L MKK2 aa
 379 Q Q N K N A P S T A G L G Y G S W E I D P K D L T F L K E L hAtk (X58957)
 340 F G R Q K A P V T A G L R Y G K W V I D P S E L T F V Q E I hTKT (L10717)
 243 T K G K N A P T T A G F S Y D K W E I N P S E L T F M R E L mTec (X5663)

424 G S G Q F G V V Q L G K W K G Q Y D V A V K M I K E G S M S MKK2 aa
 409 G T G Q F G V V K Y G K W R G O Y D V A I K M I K E G S M S hAtk (X58957)
 370 G S G Q F G L V H L G Y W L N K D K V A I K T I R E G A M S hTKT (L10717)
 273 G S G L F G V V R L G K W R A O Y K V A I K A I R E G A M C mTec (X5663)

454 E D E F F Q E A Q T M M K L S H P K L V K F Y G V C S K E Y MKK2 aa
 439 E D E F I E E A K V M M N L S H E K L V Q L Y G V C T K Q R hAtk (X58957)
 400 E E D F I E E A E V M M K L S H P K L V Q L Y G V C L E Q A hTKT (L10717)
 303 E E D F I E E A K V M M K L T H P K L V Q L Y G V C T Q Q K mTec (X5663)

484 P I Y I V T E Y I S N G C L L N Y L R S H G K G L E P S Q L MKK2 aa
 469 P I F I I T E Y M A N G C L L N Y L R E M R H R F Q T Q Q L hAtk (X58957)
 430 P I C L V F E F M E H G C L S D Y L R T Q R G L F A A E T L hTKT (L10717)
 333 P I Y I V T E F M E R G C L L N F L R Q R Q G H F S R D M L mTec (X5663)

514 L E M C Y D V C E G M A F L E S H Q F I H R D L A A R N C L MKK2 aa
 499 L E M C K D V C E A M E Y L E S K O F L H R D L A A R N C L hAtk (X58957)
 460 L G M C L D V C E G M A Y L E E A C V I H R D L A A R N C L hTKT (L10717)
 363 L S M C Q D V C E G M E Y L E R N S F I H R D L A A R N C L mTec (X5663)

544 V D R D L C V K V S D F G M T R Y V L D D Q Y V S S V G T K MKK2 aa
 529 V N D Q G V V K V S D F G L S R Y V L D D E Y T S S V G S K hAtk (X58957)
 490 V G E N Q V I K V S D F G M T R F V L D D Q Y T S S T G T K hTKT (L10717)
 393 V N E A G V V K V S D F G M A R Y V L D D O Y T S S S G A K mTec (X5663)

574 F P V K W S A P E V F H Y F K Y S S K S D V W A F G I L M W MKK2 aa
 559 F P V R W S P P E V L M Y S K F S S K S D I W A F G V L M W hAtk (X58957)
 520 F P V K W A S P E V F S F S R Y S S K S D V W S F G V L M W hTKT (L10717)
 423 F P V K W C P P E V F N Y S R F S S K S D V W S F G V L M W mTec (X5663)

604 E V F S L G K Q P Y D L Y D N S Q V V L K V S Q G H R L Y R MKK2 aa
 589 E I Y S L G K M P Y E R F T N S E T A E H I A Q G L R L Y R hAtk (X58957)
 550 E V F S E G K I P Y E N R S N S E V V E D I S T G F R L Y K hTKT (L10717)
 453 E I F T E G R M P F E K N T N Y E V V T M V I T R G H R L H R mTec (X5663)

634 P H L A S D T I Y Q I M Y S C W H E L P E K R P T F Q Q L L MKK2 aa
 619 P H L A S E K V Y T I M Y S C W H E K A D E R P T F K I L L hAtk (X58957)
 580 P R L A S T H V Y Q I M N H C W K E R P E D R P A F S R L L hTKT (L10717)
 483 P K L A T K Y L Y E V M L R C W Q E R P E G R P S F E D L L mTec (X5663)

664 S S I E P L R E K D K H MKK2 aa
 649 S N I L D V M D E E S hAtk (X58957)
 610 R Q L A E I A E S - - - G L hTKT (L10717)
 513 R T I D E L V E C E E T F G R mTec (X5663)

FIGURE 10B

1 M S N I C Q R L W E - - - - - M K K 3 M P I a a
 1 M G C V Q C K D K E A - T - - - K L T E E R D G S L N Q - S hFyn
 1 M G C V H C K E K I S - G - - - K G Q G G S G T G T P A - H cYrk
 1 M G S N K S K P K D A - S Q R - R R S L E P A E N V H G - A hSrc
 1 M G C I K S K E N K S - P A I - K Y R P E N T P E P V S - T hYes
 1 M G C V F C K K L E P - V A T A K E D A G L E G D F R S Y G hFgr
 1 M G C I K S K G K D S L S D D G V D L - K T Q P V R N T E R hLyn
 1 M G S M K S K - - - F L Q V G G N T F S K T E T S A S P H C hHck
 1 M G C G C S S - - - H P E D D W M E N I D V C E N C H Y hLck
 1 M G L L S S K R Q V S E K G K G W S P V K I R T Q D K A P P mBlk

11 - - - - - Y L E P M K K 3 M P I a a
 26 S G Y R Y G T D P T P Q H Y P S F G V T S I P N - - Y N N F hFyn
 26 P P S Q Y D P D P T - O L S G A F - - T H I P D - - F N N F cYrk
 28 G G G A F P A S Q T P S K P A S A D G H R G P S A A F A P A hSrc
 28 S V S H Y G A E P T T V S P C P S S S A K G T A V N F S S L hYes
 30 A A D H Y G P D P T K A R P A S - S F A H I P N - - Y S N F hFgr
 30 T I Y V R D P T S N K Q R P V P E S Q L L P G Q R F Q T K hLyn
 28 P V Y V P D P T S T I K P G P N S H N S N T P G I R - - - hHck
 26 P I V P L D G K G T L L I R N G S E V R D - P L V T Y E G S hLck
 31 P L P P L V V F N H L A P P S P N Q - - - - - mBlk

15 Y L P C L S T E A D K S T V I E N P G A L C S P Q S Q R H G M K K 3 M P I a a
 54 H A A - - - G G Q G L T V F G G V N - - S S S H T G T L R T hFyn
 51 H A A - - - A V S P P V P F S G P G F Y P C N T L Q A H S S cYrk
 58 A A E P - - - - - K L F G G F N S S D T V T S P Q R A G hSrc
 58 S M T P F G G S S G V T P F G G A S S S F S V V P S S Y P A hYes
 57 S S Q A I N P G - - - - - F - - - - - L D S G T I R G hFgr
 60 D P E E - - - - - Q G - - - - - hLyn
 54 E A G S - - - - - E D - - - - - hHck
 55 N P P A - - - - - S P L Q D - - - - - hLck
 49 D P D E - - - - - E E - - - - - mBlk

45 H - - - - - Y F V A L F D Y Q A R T A E D L S F R A G D K M K K 3 M P I a a
 79 R G G T G V T L F V A L Y D Y E A R T E D D L S F H K G E K hFyn
 78 I T G G G V T L F I A L Y D Y E A R T E D D L S F Q K G E K cYrk
 81 P L A G G V T T F V A L Y D Y E S R T E T D L S F K K G E R hSrc
 88 G L T G G V T I F V A L Y D Y E A R T T E D L S F K K G E R hYes
 74 V S G I G V T L F I A L Y D Y E A R T E D D L T F T K G E K hFgr
 66 - - - - - D I V V A L Y P Y D G I H P D D L S F K K G E K hLyn
 60 - - - - - I I V V A L Y D Y E A I H H E D L S F Q K G D Q hHck
 64 - - - - - N L V I A L H S Y E P S H D G D L G F E K G E Q hLck
 55 - - - - - R F V V A L F D Y A A V N D R D L Q V L K G E K mBlk

69 L Q V L D T L H E G W W F A R H L E K R R D G S S Q Q L Q G M K K 3 M P I a a
 109 F O I L N S S E G D W W E A R S L T T G E T G - - - - - hFyn
 108 F H I I N N T E G D W W E A R S L S S G A T G - - - - - cYrk
 111 L Q I V N N T E G D W W L A H S L S T G Q T G - - - - - hSrc
 118 F O I I N N T E G D W W E A R S I A T G K N G - - - - - hYes
 104 F H I L N N T E G D W W E A R S L S S G K T G - - - - - hFgr
 90 M K V L E E H - G E W W K A K S L L T K K E G - - - - - hLyn
 84 M V V L E E S - G E W W K A R S L A T R K E G - - - - - hHck
 88 L R I L E Q S - G E W W K A Q S L T T G Q E G - - - - - hLck
 79 L Q V L R S T - G D W W L A R S L V T G R E G - - - - - mBlk

FIGURE 11A

99	Y	I	P	S	N	Y	V	A	E	D	R	S	L	Q	A	E	P	W	F	F	G	A	I	G	R	S	D	A	E	K	MKK3 MPI aa
132	Y	I	P	S	N	Y	V	A	P	V	D	S	I	Q	A	E	E	W	Y	F	G	K	L	G	R	K	D	A	E	R	hFyn
131	Y	I	P	S	N	Y	V	A	P	V	D	S	I	Q	A	E	E	W	Y	F	G	K	I	G	R	K	D	A	E	R	cYrk
134	Y	I	P	S	N	Y	V	A	P	S	D	S	I	Q	A	E	E	W	Y	F	G	K	I	T	R	R	E	S	E	R	hSrc
141	Y	I	P	S	N	Y	V	A	P	A	D	S	I	Q	A	E	E	W	Y	F	G	K	M	G	R	K	D	A	E	R	hYes
127	C	I	P	S	N	Y	V	A	P	V	D	S	I	Q	A	E	E	W	Y	F	G	K	I	G	R	K	D	A	E	R	hFgr
112	F	I	P	S	N	Y	V	A	K	L	N	T	L	E	T	E	E	W	F	F	K	D	I	T	R	K	D	A	E	R	hLyn
106	Y	I	P	S	N	Y	V	A	R	V	D	S	L	E	T	E	E	W	F	F	K	G	I	S	R	K	D	A	E	R	hHck
110	F	I	P	E	N	F	V	A	K	A	N	S	L	E	P	E	P	W	F	F	K	N	L	S	R	K	D	A	E	R	hLck
101	Y	V	P	S	N	F	V	A	P	V	E	T	L	E	V	E	K	W	F	F	R	T	I	S	R	K	D	A	E	R	mBlk
129	Q	L	L	Y	S	E	N	K	T	G	S	F	L	I	R	E	S	E	S	Q	K	G	E	F	S	L	S	V	L	D	MKK3 MPI aa
162	Q	L	L	S	F	G	N	P	R	G	T	F	L	I	R	E	S	E	T	T	K	G	A	Y	S	L	S	I	R	D	hFyn
161	Q	L	L	C	H	G	N	C	R	G	T	F	L	I	R	E	S	E	T	T	K	G	A	Y	S	L	S	I	R	D	cYrk
164	L	L	L	N	A	E	N	P	R	G	T	F	L	V	R	E	S	E	T	T	K	G	A	Y	C	L	S	V	S	D	hSrc
171	L	L	L	N	P	G	N	Q	R	G	I	F	L	V	R	E	S	E	T	T	K	G	A	Y	S	L	S	I	R	D	hYes
157	Q	L	L	S	P	G	N	P	Q	G	A	F	L	I	R	E	S	E	T	T	K	G	A	Y	S	L	S	I	R	D	hFgr
142	Q	L	L	A	P	G	N	S	A	G	A	F	L	I	R	E	S	E	T	L	K	G	S	F	S	L	S	V	R	D	hLyn
136	Q	L	L	A	P	G	N	M	L	G	S	F	M	I	R	D	S	E	T	T	K	G	S	Y	S	L	S	V	R	D	hHck
140	Q	L	L	A	P	G	N	T	H	G	S	F	L	I	R	E	S	E	S	T	A	G	S	F	S	L	S	V	R	D	hLck
131	Q	L	L	A	P	M	N	K	A	G	S	F	L	I	R	E	S	E	S	N	K	G	A	F	S	L	S	V	K	D	mBlk
159	-	-	-	-	-	G	A	V	V	K	H	Y	R	I	K	R	L	D	E	G	G	F	F	L	T	R	R	R	I	F	MKK3 MPI aa
192	W	D	D	M	K	G	D	H	V	K	H	Y	K	I	R	K	L	D	N	G	G	Y	Y	I	T	T	R	A	Q	F	hFyn
191	W	D	E	A	K	G	D	H	V	K	H	Y	K	I	R	K	L	D	S	G	G	Y	Y	I	T	T	R	A	Q	F	cYrk
194	F	D	N	A	K	G	L	N	V	K	H	Y	K	I	R	K	L	D	S	G	G	F	Y	I	T	S	R	T	Q	F	hSrc
201	W	D	E	I	R	G	D	N	V	K	H	Y	K	I	R	K	L	D	N	G	G	Y	Y	I	T	T	R	A	Q	F	hYes
187	W	D	Q	T	R	G	D	H	V	K	H	Y	K	I	R	K	L	D	M	G	G	Y	Y	I	T	T	R	V	Q	F	hFgr
172	F	D	P	V	H	G	D	V	I	K	H	Y	K	I	R	S	L	D	N	G	G	Y	Y	I	S	P	R	I	T	F	hLyn
166	Y	D	P	R	Q	G	D	T	V	K	H	Y	K	I	R	T	L	D	N	G	G	F	Y	I	S	P	R	S	T	F	hHck
170	F	D	Q	N	Q	G	E	V	V	K	H	Y	K	I	R	N	L	D	N	G	G	F	Y	I	S	P	R	I	T	F	hLck
161	I	T	T	-	Q	G	E	V	V	K	H	Y	K	I	R	S	L	D	N	G	G	Y	Y	I	S	P	R	I	T	F	mBlk
184	S	T	L	N	E	F	V	S	H	Y	T	K	T	S	D	G	L	C	V	K	L	G	K	P	C	L	K	I	Q	V	MKK3 MPI aa
222	E	T	L	Q	Q	L	V	Q	H	Y	S	E	R	A	A	G	L	C	C	R	L	V	V	P	C	H	K	G	M	-	hFyn
221	D	T	I	Q	Q	L	V	Q	H	Y	I	E	R	A	A	G	L	C	C	R	L	A	V	P	C	P	K	G	T	-	cYrk
224	N	S	L	Q	Q	L	V	A	Y	Y	S	K	H	A	D	G	L	C	H	R	L	T	T	V	C	P	T	S	K	-	hSrc
231	D	T	L	Q	K	L	V	K	H	Y	T	E	H	A	D	G	L	C	H	K	L	T	T	V	C	P	T	V	K	-	hYes
217	N	S	V	Q	E	L	V	Q	H	Y	M	E	V	N	D	G	L	C	N	L	L	I	A	P	C	T	I	M	K	-	hFgr
202	P	C	I	S	D	M	I	K	H	Y	Q	K	Q	A	D	G	L	C	R	R	L	E	K	A	C	I	S	P	K	-	hLyn
196	S	T	L	Q	E	L	V	D	H	Y	K	K	G	N	D	G	L	C	Q	K	L	S	V	P	C	M	S	S	K	-	hHck
200	P	G	L	H	E	L	V	R	H	Y	T	N	A	S	D	G	L	C	T	R	L	S	R	P	C	Q	T	Q	K	-	hLck
190	P	T	L	Q	A	L	V	Q	H	Y	S	K	K	G	D	G	L	C	Q	K	L	T	L	P	C	V	N	L	A	-	mBlk
214	P	A	P	F	D	L	S	Y	K	T	V	D	Q	W	E	I	D	R	N	S	I	Q	L	L	K	R	L	G	S	G	MKK3 MPI aa
251	P	R	L	T	D	L	S	V	K	T	K	D	V	W	E	I	P	R	E	S	L	Q	L	I	K	R	L	G	N	G	hFyn
250	P	K	L	A	D	L	S	V	K	T	K	D	V	W	E	I	P	R	E	S	L	Q	L	L	Q	K	L	G	N	G	cYrk
253	P	Q	T	Q	G	L	A	-	-	-	K	D	A	W	E	I	P	R	E	S	L	R	L	E	V	K	L	G	Q	G	hSrc
260	P	Q	T	Q	G	L	A	-	-	-	K	D	A	W	E	I	P	R	E	S	L	R	L	E	V	K	L	G	Q	G	hYes
246	P	Q	T	L	G	L	A	-	-	-	K	D	A	W	E	I	S	R	S	I	T	L	E	R	R	L	G	T	G	hFgr	
231	P	Q	-	-	-	-	K	P	W	D	K	D	A	W	E	I	P	R	E	S	I	K	L	V	K	R	L	G	A	G	hLyn
225	P	Q	-	-	-	-	K	P	W	E	K	D	A	W	E	I	P	R	E	S	L	K	L	E	K	K	L	G	A	G	hHck
229	P	Q	-	-	-	-	K	P	W	W	E	D	E	W	E	V	P	R	E	T	L	K	L	V	E	R	L	G	A	G	hLck
219	P	K	-	-	-	-	N	L	W	A	Q	D	E	W	E	I	P	R	Q	S	L	K	L	V	R	K	L	G	S	G	mBlk

FIGURE 11B

244	Q	F	G	E	V	W	E	G	L	W	N	N	T	T	P	V	A	V	K	T	L	K	P	G	S	M	D	P	N	D	MKK3 MPI aa
281	Q	F	G	E	V	W	M	G	T	W	N	G	N	T	K	V	A	I	K	T	L	K	P	G	T	M	S	P	E	S	hFyn
280	Q	F	G	E	V	W	M	G	T	W	N	G	T	T	K	V	A	V	K	T	L	K	P	G	T	M	S	P	E	A	cYrk
280	C	F	G	E	V	W	M	G	T	W	N	G	T	T	R	V	A	I	K	T	L	K	P	G	T	M	S	P	E	A	hSrc
287	C	F	G	E	V	W	M	G	T	W	N	G	T	T	K	V	A	I	K	T	L	K	P	G	T	M	S	P	E	A	hYes
273	C	F	G	D	V	W	L	G	T	W	N	G	S	T	K	V	A	V	K	T	L	K	P	G	T	M	S	P	K	A	hFgr
257	Q	F	G	E	V	W	M	G	Y	Y	N	N	S	T	K	V	A	V	K	T	L	K	P	G	T	M	S	V	O	A	hLyn
251	Q	F	G	E	V	W	M	A	T	Y	N	K	H	T	K	V	A	V	K	T	M	K	P	G	S	M	S	V	E	A	hHck
255	Q	F	G	E	V	W	M	G	Y	Y	N	G	H	T	K	V	A	V	K	S	L	K	Q	G	S	M	S	P	D	A	hLck
245	Q	F	G	E	V	W	M	G	Y	Y	K	N	N	M	K	V	A	I	K	T	L	K	E	G	T	M	S	P	E	A	mBlk
274	F	L	R	E	A	Q	I	M	K	N	L	R	H	P	K	L	I	Q	L	Y	A	V	C	T	L	E	D	P	I	Y	MKK3 MPI aa
311	F	L	E	E	A	Q	I	M	K	K	L	K	H	D	K	L	V	Q	L	Y	A	V	V	S	-	E	E	P	I	Y	hFyn
310	F	L	E	E	A	Q	I	M	K	R	L	R	H	D	K	L	V	Q	L	Y	A	V	V	S	-	E	E	P	I	Y	cYrk
310	F	L	Q	E	A	Q	V	M	K	K	L	R	H	E	K	L	V	Q	L	Y	A	V	V	S	-	E	E	P	I	Y	hSrc
317	F	L	Q	E	A	Q	I	M	K	K	L	R	H	D	K	L	V	P	L	Y	A	V	V	S	-	E	E	P	I	Y	hYes
303	F	L	E	E	A	Q	V	M	K	L	L	R	H	D	K	L	V	Q	L	Y	A	V	V	S	-	E	E	P	I	Y	hFgr
287	F	L	E	E	A	N	L	M	K	T	L	Q	H	D	K	L	V	R	L	Y	A	V	V	T	R	E	E	P	I	Y	hLyn
281	F	L	A	E	A	N	V	M	K	T	L	Q	H	D	K	L	V	K	L	H	A	V	V	T	K	E	-	P	I	Y	hHck
285	F	L	A	E	A	N	L	M	K	Q	L	Q	H	Q	R	L	V	R	L	Y	A	V	V	T	-	Q	E	P	I	Y	hLck
275	F	L	G	E	A	N	V	M	K	T	L	Q	H	E	R	L	V	R	L	Y	A	V	V	T	R	E	-	P	I	Y	mBlk
304	I	I	T	E	L	M	R	H	G	S	L	Q	E	Y	L	Q	N	D	T	G	S	K	I	H	L	T	Q	Q	V	D	MKK3 MPI aa
340	I	V	T	E	Y	M	N	K	G	S	L	L	D	F	L	K	D	G	E	G	R	A	L	K	L	P	N	L	V	D	hFyn
339	I	V	T	E	F	M	S	Q	G	S	L	L	D	F	L	K	D	G	D	G	R	Y	L	K	L	P	Q	L	V	D	cYrk
339	I	V	T	E	Y	M	S	K	G	S	L	L	D	F	L	K	G	E	T	G	K	Y	L	R	L	P	Q	L	V	D	hSrc
346	I	V	T	E	F	M	S	K	G	S	L	L	D	F	L	K	E	G	D	G	K	Y	L	K	L	P	Q	L	V	D	hYes
332	I	V	T	E	F	M	C	H	G	S	L	L	D	F	L	K	N	P	E	G	Q	D	L	R	L	P	Q	L	V	D	hFgr
317	I	I	T	E	Y	M	A	K	G	S	L	L	D	F	L	K	S	D	E	G	G	K	V	L	L	P	K	L	I	D	hLyn
310	I	I	T	E	F	M	A	K	G	S	L	L	D	F	L	K	S	D	E	G	S	K	Q	P	L	P	K	L	I	D	hHck
314	I	I	T	E	Y	M	E	N	G	S	L	V	D	F	L	K	T	P	S	G	I	K	L	T	I	N	K	L	L	D	hLck
304	I	V	T	E	Y	M	A	R	G	C	L	L	D	F	L	K	T	D	E	G	S	R	L	S	L	P	R	L	I	D	mBlk
334	M	A	A	Q	V	A	S	G	M	A	Y	L	E	S	R	N	Y	I	H	R	D	L	A	A	R	N	V	L	V	G	MKK3 MPI aa
370	M	A	A	Q	V	A	A	G	M	A	Y	I	E	R	M	N	Y	I	H	R	D	L	R	S	A	N	I	L	V	G	hFyn
369	M	A	A	Q	I	A	A	G	M	A	Y	I	E	R	M	N	Y	I	H	R	D	L	R	A	A	N	I	L	V	G	cYrk
369	M	A	A	Q	I	A	S	G	M	A	Y	V	E	R	M	N	Y	V	H	R	D	L	R	A	A	N	I	L	V	G	hSrc
376	M	A	A	Q	I	A	D	G	M	A	Y	I	E	R	M	N	Y	I	H	R	D	L	R	A	A	N	I	L	V	G	hYes
362	M	A	A	Q	V	A	E	G	M	A	Y	M	E	R	M	N	Y	I	H	R	D	L	R	A	A	N	I	L	V	G	hFgr
347	F	S	A	Q	I	A	E	G	M	A	Y	I	E	R	K	N	Y	I	H	R	D	L	R	A	A	N	V	L	V	S	hLyn
340	F	S	A	Q	I	A	E	G	M	A	F	I	E	Q	R	N	Y	I	H	R	D	L	R	A	A	N	I	L	V	S	hHck
344	M	A	A	Q	I	A	E	G	M	A	F	I	E	E	R	N	Y	I	H	R	D	L	R	A	A	N	I	L	V	S	hLck
334	M	S	A	Q	V	A	E	G	M	A	Y	I	E	R	M	N	S	I	H	R	D	L	R	A	A	N	I	L	V	S	mBlk
364	E	H	N	I	Y	K	V	A	D	F	G	L	A	R	V	F	K	V	D	N	E	D	I	Y	E	S	R	H	E	I	MKK3 MPI aa
400	N	G	L	I	C	K	I	A	D	F	G	L	A	R	L	I	-	-	-	E	D	N	E	Y	T	A	R	Q	G	A	hFyn
399	D	N	L	V	C	K	I	A	D	F	G	L	A	R	L	I	-	-	-	E	D	N	E	Y	T	A	R	Q	G	A	cYrk
399	E	N	L	V	C	K	V	A	D	F	G	L	A	R	L	I	-	-	-	E	D	N	E	Y	T	A	R	Q	G	A	hSrc
406	E	N	L	V	C	K	I	A	D	F	G	L	A	R	L	I	-	-	-	E	D	N	E	Y	T	A	R	Q	G	A	hYes
392	E	R	L	A	C	K	I	A	D	F	G	L	A	R	L	I	-	-	-	K	D	D	E	Y	N	P	C	O	G	S	hFgr
377	E	S	L	M	C	K	I	A	D	F	G	L	A	R	V	I	-	-	-	E	D	N	E	Y	T	A	R	E	G	A	hLyn
370	A	S	L	V	C	K	I	A	D	F	G	L	A	R	V	I	-	-	-	E	D	N	E	Y	T	A	R	E	G	A	hHck
374	D	T	L	S	C	K	I	A	D	F	G	L	A	R	L	I	-	-	-	E	D	N	E	Y	T	A	R	E	G	A	hLck
364	E	T	L	C	C	K	I	A	D	F	G	L	A	R	I	I	-	-	-	D	S	E	Y	T	A	Q	E	G	A	mBlk	

FIGURE 11C

394	K	L	P	V	K	W	T	A	P	E	A	I	R	S	N	K	F	S	I	K	S	D	V	W	S	F	G	I	L	L	MKK3 MPI aa
427	K	F	P	I	K	W	T	A	P	E	A	A	L	Y	G	R	F	T	I	K	S	D	V	W	S	F	G	I	L	L	hFyn
426	K	F	P	I	K	W	T	A	P	E	A	A	L	F	G	K	F	T	I	K	S	D	V	W	S	F	G	I	L	L	cYrk
426	K	F	P	I	K	W	T	A	P	E	A	A	L	Y	G	R	F	T	I	K	S	D	V	W	S	F	G	I	L	L	hSrc
433	K	F	P	I	K	W	T	A	P	E	A	A	L	Y	G	R	F	T	I	K	S	D	V	W	S	F	G	I	L	Q	hYes
419	K	F	P	I	K	W	T	A	P	E	A	A	L	F	G	R	F	T	I	K	S	D	V	W	S	F	G	I	L	L	hFgr
404	K	F	P	I	K	W	T	A	P	E	A	I	N	F	G	C	F	T	I	K	S	D	V	W	S	F	G	I	L	L	hLyn
397	K	F	P	I	K	W	T	A	P	E	A	I	N	F	G	S	F	T	I	K	S	D	V	W	S	F	G	I	L	L	hHck
401	K	F	P	I	K	W	T	A	P	E	A	I	N	Y	G	T	F	T	I	K	S	D	V	W	S	F	G	I	L	L	hLck
390	K	F	P	I	K	W	T	A	P	E	A	I	H	F	G	V	F	T	I	K	A	D	V	W	S	F	G	V	L	L	mBlk
424	Y	E	I	I	T	Y	G	K	M	P	Y	S	G	M	T	G	A	Q	V	I	Q	M	L	A	Q	N	Y	R	L	P	MKK3 MPI aa
457	T	E	L	V	T	K	G	R	V	P	Y	P	G	M	N	N	R	E	V	L	E	Q	V	E	R	G	Y	R	M	P	hFyn
456	T	E	L	V	T	K	G	R	V	P	Y	P	G	M	N	N	R	E	V	L	E	Q	V	E	R	G	Y	R	M	Q	cYrk
456	T	E	L	T	T	K	G	R	V	P	Y	P	G	M	V	N	R	E	V	L	D	Q	V	E	R	G	Y	R	M	P	hSrc
463	T	E	L	V	T	K	G	R	V	P	Y	P	G	M	V	N	R	E	V	L	E	Q	V	E	R	G	Y	R	M	P	hYes
449	T	E	L	I	T	K	G	R	I	P	Y	P	G	M	N	K	R	E	V	L	E	O	V	E	Q	G	Y	H	M	P	hFgr
434	Y	E	I	V	T	Y	G	K	I	P	Y	P	G	R	T	N	A	D	V	M	T	A	L	S	Q	G	Y	R	M	P	hLyn
427	M	E	I	V	T	Y	G	R	I	P	Y	P	G	M	S	N	P	E	V	I	R	A	L	E	R	G	Y	R	M	P	hHck
431	T	E	I	V	T	H	G	R	I	P	Y	P	G	M	T	N	P	E	V	I	Q	N	L	E	R	G	Y	R	M	V	hLck
420	M	V	I	V	T	Y	G	R	V	P	Y	P	G	M	S	N	P	E	V	I	R	S	L	E	H	G	Y	R	M	P	mBlk
454	Q	P	S	N	C	P	Q	Q	F	Y	N	-	I	M	L	E	C	W	N	A	E	P	K	E	R	P	T	F	E	T	MKK3 MPI aa
487	C	P	Q	D	C	P	I	S	L	H	-	E	L	M	I	H	C	W	K	K	D	P	E	E	R	P	T	F	E	Y	hFyn
486	C	P	G	G	C	P	P	S	L	H	-	D	V	M	V	Q	C	W	K	R	E	P	E	E	R	P	T	F	E	Y	cYrk
486	C	P	P	E	C	P	E	S	L	H	-	D	L	M	C	O	C	W	R	K	E	P	E	E	R	P	T	F	E	Y	hSrc
493	C	P	Q	G	C	P	E	S	L	H	-	E	L	M	N	L	C	W	K	K	D	P	D	E	R	P	T	F	E	Y	hYes
479	C	P	P	G	C	P	A	S	L	Y	-	E	A	M	E	Q	T	W	R	L	D	P	E	E	R	P	T	F	E	Y	hFgr
464	R	V	E	N	C	P	D	E	L	Y	-	D	I	M	K	M	C	W	K	E	K	A	E	E	R	P	T	F	D	Y	hLyn
457	R	P	E	N	C	P	E	E	L	Y	-	N	I	M	M	R	C	W	K	N	R	P	E	E	R	P	T	F	E	Y	hHck
461	R	P	D	N	C	P	E	E	L	Y	-	Q	L	M	R	L	C	W	K	E	R	P	E	D	R	P	T	F	D	Y	hLck
450	C	P	E	T	C	P	P	E	L	Y	N	D	I	I	T	E	C	W	R	G	R	P	E	E	R	P	T	F	E	F	mBlk
483	L	R	W	K	L	E	D	Y	F	E	-	T	D	S	S	Y	S	D	A	N	N	F	I	R							MKK3 MPI aa
516	L	Q	S	F	L	E	D	Y	F	T	A	T	E	P	Q	Y	Q	P	G	E	N	-	-	-	L						hFyn
515	L	Q	S	F	L	E	D	Y	F	T	A	T	E	P	Q	Y	Q	P	G	D	N	-	-	-	Q						cYrk
515	L	Q	A	F	L	E	D	Y	F	T	S	T	E	P	Q	Y	Q	P	G	E	N	-	-	-	L						hSrc
522	I	Q	S	F	L	E	D	Y	F	T	A	T	E	P	Q	Y	Q	P	G	E	N	-	-	-	L						hYes
508	L	Q	S	F	L	E	D	Y	F	T	S	A	E	P	Q	Y	Q	P	G	D	Q	-	-	-	T						hFgr
493	L	Q	S	V	L	D	D	F	Y	T	A	T	E	G	Q	Y	Q	Q	-	-	Q	-	-	-	P						hLyn
486	I	Q	S	V	L	D	D	F	Y	T	A	T	E	S	Q	Y	Q	Q	-	-	Q	-	-	-	P						hHck
490	L	R	S	V	L	E	D	F	F	T	A	T	E	G	Q	Y	Q	P	-	-	Q	-	-	-	P						hLck
480	L	Q	S	V	L	E	D	F	Y	T	A	T	E	G	Q	Y	E	L	-	-	Q	-	-	-	P						mBlk

FIGURE 11D

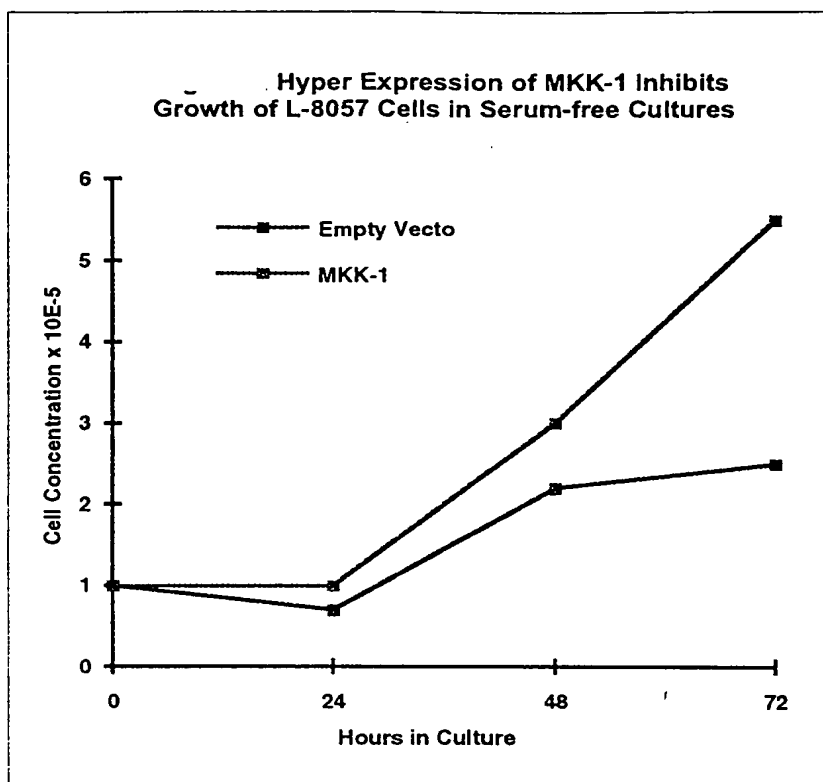


FIGURE 12

Growth Factor Response of MKK-1 Expressing L-8057 Cells

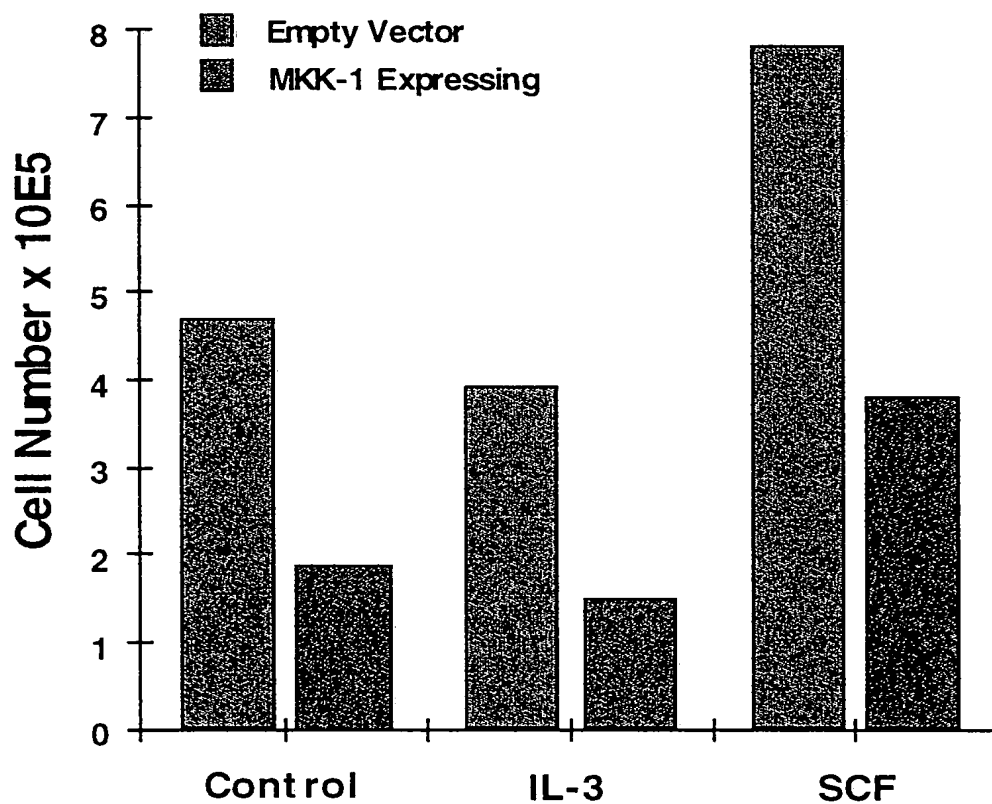
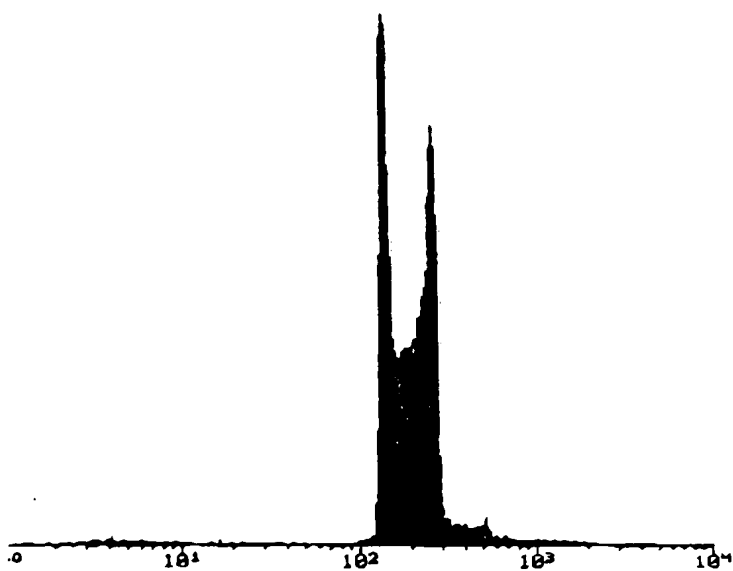


FIGURE 13

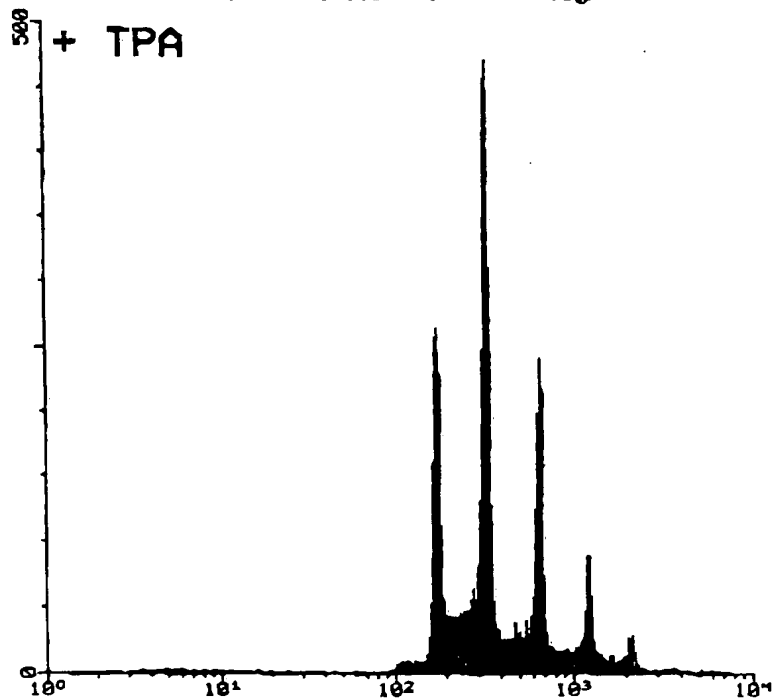
FACS37:FACS37001~FL2-H~FL2-Height

CONTROL



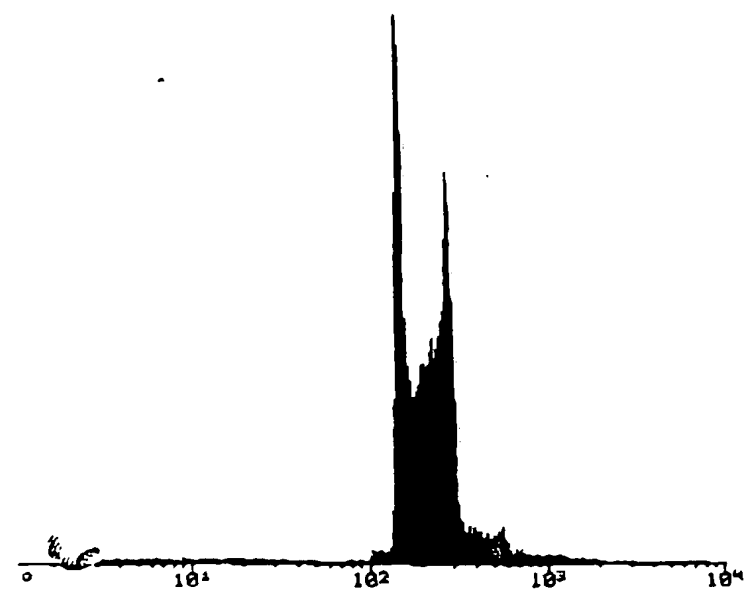
FACS37:FACS37002~FL2-H~FL2-Height

+ TPA



FACS37:FACS37003~FL2-H~FL2-Height

MKK-1



FACS37:FACS37004~FL2-H~FL2-Height

MKK-1 + TPA

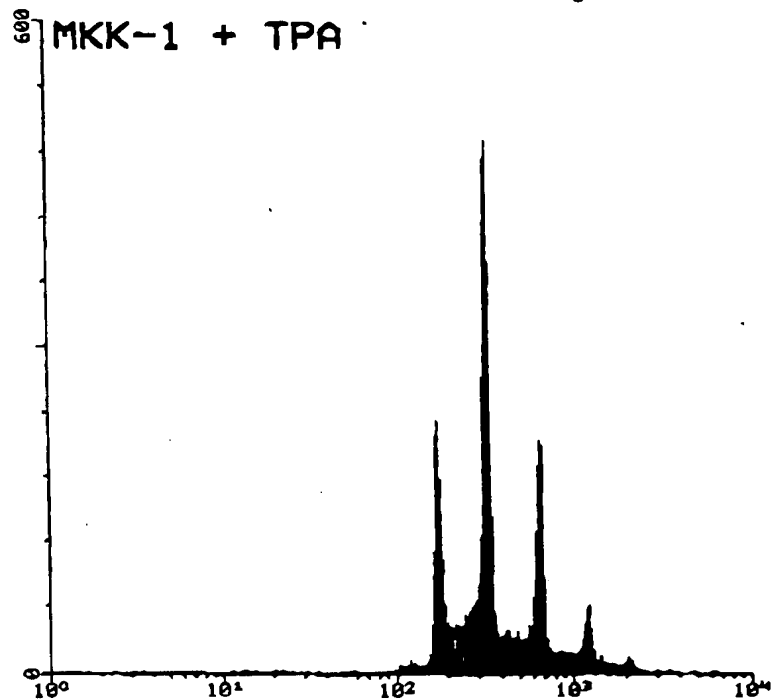


FIGURE 14